

platform). This is represented in the drawing by names of the respective platform-specific scanners (though, it can represent more than merely scanners).

In the illustrated embodiment, a novel mechanism is utilized to provide communication between the platform-independent modules and the platform-dependent modules. Particularly, as such communication potentially crosses language barriers, the platform-dependent functions are implemented as a standalone applications which accepts input via command line parameters and return the output through Standard Output or Standard Error. More simply put, the platform-independent functions invoke and communicate with the platform-dependent function via a command line interface.

In operation, XML encoding requests, commands or data generated by the query engine 46 is passed to communication service 510, along with an identifier of the agent to which the same is to be directed. Service 510 determines from registry 512 and address for the target agent and transmits the data accordingly via LAN 18 (or other medium). The XML is communicated via CORBA in the illustrated embodiment, though other protocols and/or mechanisms can be used instead or in addition. Platform-independent modules comprising the agent framework and subagents receive the XML requests, commands or data and process them in accord with the implicated agent function and services. Processing that requires action of the platform-dependent modules are communicated to them via the command line, as noted immediately above. Data and other information generated by the platform-dependent modules is returned via Standard Output, Standard Error or other such operating system command-level environmental variables. In the illustrated embodiment that data or other information, which is encoded by the

platform-dependent modules in XML (or other suitable format), is transmitted via the platform-independent framework or subAgents back to the service 510, via LAN 18, for processing by the SAN manager.

- 5 An advantage of the architecture illustrated in FIGURE 43 is that it separates the platform dependent/independent components of the agent implementations, e.g., at the subAgent/Scanner boundary. In addition to facilitating development of agent implementations on a variety of platforms, this allows for great flexibility in testing. Thus, for example, since the scanners or other platform-dependent modules are implemented as stand-alone applications, they can be  
10 executed independently for unit level testing.

Moreover, re-creation of agent output is easily accomplished by executing the standalone scanner and capturing the output in a file, which is later read by a modified version of the agent. That is, the agent executes an application and then receives the output by capturing the Standard  
15 Output information. A modified version of the scanner or other platform-dependent module can simply read a file previously created by a Scanner and outputting this file to Standard Out. The information can be manually modified, to provide larger sets of information that are not possible to physically configure or generate test datasets for other difficult situations, and used as input by using the same modified module (which reads a previously generated file and routes the  
20 information to Standard Out).

Described herein are systems and methods achieving the objects set forth above. Those skilled in the art will appreciate that the illustrated embodiments are mere examples of the invention and

that other systems and methods incorporating additions, modifications or other changes therein fall within the scope of the invention. By way of non-limiting example, it will be appreciated that the system and methods described herein can be implemented on any variety of manager and host digital data processor platforms. Further, it will be appreciated that programming constructs in addition to and other than those described above may be used in practicing the invention. By way of still further non-limiting example, it will be appreciated that graphical user interface techniques other than and/or in addition to those described herein may be beneficially employed in systems and methods of the invention. Still further, interconnection media and schemes in addition to and other than those described above can be used to support communications between the managers, hosts and/or storage devices.

In view of the foregoing, what we claim is: